

Efficacy of Implementing Nursing Educational Program on Reduction of Risk of Varicose Veins among Nurses at Tanta University Hospital

Sara A. Anwar¹, Afaf A. Basal², Seham A. Abd El-Hay³, Ahmed M. Tawfik⁴, Zeinab F. Bahgat⁵

¹ Instructor at Tanta EL Mobra Nursing Institute, Faculty of Nursing, Tanta University, Egypt.

^{2, 3} Professor of Medical Surgical Nursing, Medical Surgical Nursing Department, Faculty of Nursing, Tanta University, Egypt.

⁴ Assistant Professor of Vascular Surgery, Vascular Surgery Department, Faculty of Medicine, Tanta University, Egypt.

⁵ Lecturer of Medical Surgical Nursing, Medical Surgical Nursing Department, Faculty of Nursing, Tanta University, Egypt.

E-mail: ¹saraanwar008@gmail.com, ² drafafbasal@yahoo.com, ³ drsehamahmed@yahoo.com

⁴ ahmedvascular@yahoo.com, ⁵ zekas_k@yahoo.com

Abstract

Background: Varicose veins are one of the most common occupational diseases that have affected many nurses worldwide. **This study aimed to:** Evaluate the efficacy of implementing nursing educational program on reduction of risk of varicose veins among nurses at Tanta University Hospital. **Subjects and method:** A quasi experimental design at the main Tanta University Hospital in Operating Theater, General Medical and Surgical Departments. All nurses (150 nurses) were included. **Tools: Tool (I): Structured Interview Knowledge Questionnaire:** It consisted of four parts: Nurses' Socio-demographic data, Nurses' occupational characteristics, Nurses' health relevant data and Nurses' knowledge questionnaire regarding varicose veins. **Tool (II): Comprehensive Classification of Varicose Veins Scale. Tool (III): Self-Reported Questionnaire of Nurses' Practices for Varicose Veins Prevention. Results:** It was observed that there were a high positive significant correlation ($r=0.332$) between the total knowledge and basic preventive health measures of varicose veins. **Conclusion:** Implementing nursing educational program on reduction of risk of varicose veins was improving their knowledge, practice and decrease risk of varicose veins. **Recommendations:** It was recommended that provision of health education programs for increasing awareness of all nurses to prevent varicose veins and its consequences.

Key words: Varicose veins, occupational diseases, preventative actions.

Introduction

Varicose veins (VVs) are one of the most common occupational diseases that have affected many people worldwide. Varicose veins are often believed to be a cosmetic problem; however they may cause serious complication including severe pain, discomfort, leg cramps, ulceration, poor quality of life, and even loss of life.^(1, 2)

Varicose veins reported worldwide prevalence ranging between 20% and 60%. The American clinical guidelines for varicose

veins care points out that 27 % of the Americans had some form of varicose veins in their legs. It is estimated that 20% to 25% million Americans have varicose veins. In Egypt lower limb varicose veins were considered as one of the most common chronic venous problems affecting 47% to 50% of the whole Egyptian population.⁽³⁻⁶⁾

Varicose veins are abnormal dilated blood vessels that can appear in any part of the body where venous returns to the heart are weak

but are often seen in the lower extremities, and these conditions increase pressure on the leg veins include overweight, lack of exercises, smoking, hormonal fluctuations during pregnancy, occupations requiring sitting or standing for continuous time, deep venous thrombosis that make veins of leg very weak and finally develop into VVs.⁽⁷⁻¹²⁾

At first, varicose veins are asymptomatic, or they cause mild symptoms, but it can cause pain or itching which can have a significant effect on their quality of life. Varicose veins may become more severe over time and may lead to complications, such as skin discoloration, eczema, superficial thrombophlebitis, bleeding, or venous ulcers.⁽¹³⁻¹⁸⁾

Varicose veins categorized according to clinical, etiological, anatomical, and pathophysiological classification into three classes; class one like spider telangiectasia's and reticular veins that describe dilated intradermal venules (<1 mm in diameter), class two like dilated non-palpable veins that describe subdermal venules (1-3 mm in diameter), and class three rope-like dilated palpable sub-cutaneous veins that describe true varicose veins (>3 mm in diameter), all these classes of varicose veins present substantial cosmetic concerns.^(19, 20)

The clinical evaluation of varicose veins begins with the physical examination to determine the type, location, extent, and possibly the cause of the venous disease. Varicose veins should be inspected for erythema, tenderness, or induration that may suggest superficial vein thrombosis, moreover the clinical examination should identify any signs of more advanced chronic venous disease such as edema, hyperpigmentation and ulceration.^(21- 25)

Management of varicose veins consists of external laser treatment, injection sclerotherapy and surgery. Compression

stockings are frequently prescribed as the first step in varicose veins management and effective for treatment of discomfort and edema. Compression stockings improve venous hemodynamics by decreasing venous reflux and reducing ambulatory venous hypertension.^(26- 30)

Whether or not more advanced therapies such as ablation are considered, the best course of action is prevention of varicose veins, some self-care measures that can nurse used it to prevent varicose veins among nurses including regular physical activity such as walking and foot flexion exercise that improve calf muscle pump function to reduce pressure on veins of the leg.^(31, 32)

Additionally, nurses should avoiding constipation, eating a high-fiber, low-salt diet, avoiding tight clothing that constricts the legs, groin or waist, avoiding high heels and tight hosiery, changing the sitting or standing position regularly and avoiding long periods of standing or sitting, and avoiding crossing the legs when sitting and shifting weight from one leg to the other every few minutes when standing for long period, this change in clinical practice could ultimately reduce the risk for vascular disease.^(33, 34)

Finally, high risk nurses should be instructed to increasing compression strength through wear compression stockings in the morning while the leg is in a nondependent position and to remove them at night before going to bed, use alternative remedies, learn legs acupuncture and acupressure massage, homoeopathy and hydrotherapy technique and uses natural herbal to prevent varicose veins and reduce greater severity of chronic venous insufficiency.^(35- 38)

The aim of this study is

To evaluate the efficacy of implementing nursing educational program on reduction of risk of varicose veins among nurses at Tanta University Hospital.

Materials and methods

Study design

A quasi experimental design was used to achieve the purpose of the study.

Setting of the study

The study was conducted at the main Tanta University Hospital in Operating Theater, General Medical and Surgical Departments.

Subject

All nurses who working in the previously mentioned settings at the time of data collection (**150 nurses**). The sample was divided into three groups 50 nurses in each setting. The sample size was calculated based on Epidemiological Information Program based on the total number of nurses.

Data collection tools

Three tools were used in this study after reviewing recent relevant literatures.

Tool (I): Structured Interview Knowledge Questionnaire: It consisted of four parts developed by the researcher based on literature review as follow:

Part 1: Nurses' Socio-demographic Data: This part included structured questions about the demographic factors and personal characteristics of studied nurses such as: age, sex, marital status, place of residence.

Part 2: Nurses' Occupational Characteristics: This part consisted of statements that contain information about condition and situation of nursing duty such as: area of work, job position, number of daily working hours and number of overtime hours per month and years of the experience

Part 3: Nurses' Health Relevant Data: This part consisted of statements that contain information about studied nurses' health such as: number of pregnancy, doing exercise, bowel movement, weight, height and body mass index (BMI).

Part 4: Nurses' Knowledge Questionnaire Regarding Varicose Veins: This part used to gather the nurses' knowledge regarding

varicose veins such as: definition, risk factors, causes, clinical manifestations, classifications, diagnosis, prevention, complications and management.

Tool (II): Comprehensive Classification of Varicose Veins Scale: The original scale “Comprehensive classification of varicose veins scale” was developed by **Elkof et al in 2004** ⁽³⁹⁾, revised by **Serup et al in 2017** ⁽⁴⁰⁾ and the researcher adopt it. It is an internationally accepted standard for describing patients with chronic venous disorder.

Scoring system was calculated as follows:

Mild	CEAP C1-C2
Moderate	CEAP C3
Severe	CEAP C4-C6

Tool (III): Self-Reported Questionnaire of Nurses' Practices for Varicose Veins Prevention

This tool developed by the researcher based on literature review. It included;

A- Basic preventative health measures which included; posture of sitting or standing, foot and leg exercise, wear compression hosiery, getting medical treatment.

B- Healthy lifestyle which included; healthy eating habits, general exercise, wear compression stockings, types of clothes, maintain a healthy weight and taking care of legs.

Scoring system was calculated as follows

Self-reported questionnaire of nurses' practices for varicose veins prevention is designed in quadruple point Likert-type scale varying between never, sometimes, usually, and almost always. Each item is graded from one to four (Never = 1, sometimes = 2, usually = 3, almost always = 4).

II. Method

1- Administrative process

An official permission to carry out the study was obtained from the responsible authorities.

2- Ethical consideration

Consent was obtained from every nurse included in the study after explanation of the aim of the study and assuring them of confidentiality of collected data.

3-Tools development

- Tools I and III were developed by researcher based on relevant literature review for collection of baseline data.

- Tool II developed by **Elkof et al in 2004** ⁽³⁹⁾, and revised by **Serup et al in 2017** ⁽⁴⁰⁾, the researcher adopt it and translated into Arabic.

4- Content validity

The developed tools were tested for **content validity**, clarity and applicability by a ten jury of experts in the field of Medical Surgical Nursing at the Faculty of Nursing and Medical specialists.

5-Reliability of the tools

All tools of the study were tested for reliability and Cronbach alpha was used and found to be 0.87 for Tool I, 0.98 for Tool II and 0.88 for Tool III, which consider highly reliable tools.

6- A pilot study

A pilot study was carried out on a sample of 10% percentage of total sample (**15 nurses**) in previous mentioned setting to test clarity, feasibility and applicability of the tools. Subject of pilot study was excluded from the original sample.

7- Data collection

Data collection conducted over a period of 8 months, (started from first of January to the end of August 2021).

8. Implementing nursing educational program

The study was conducted through four main phases which are (assessment, planning, implementation and evaluation).

A- Assessment phase

The researcher introduced herself to each nurse included in the study and explained the purpose and importance of the study and reassurance about the confidentiality of the information was given at the beginning of the interview.

B- Planning phase

The nursing educational program was designed by the researcher to all nurses included in the study by dividing the nurses into three groups, each group included 50 nurses from each department divided into five subgroup each one include 10 nurses..

C- Implementation phase

This phase included collection of data during interview and the implementation of the planned teaching program.

D- Evaluation Phase

Each nurse was evaluated pre implementation, immediately post and one month after educational program.

9. After data collection, data was coded, analyzed then tabulated under the direction of a statistician to obtain results to answer the research questions.

10. Statistical analysis, after completion of data collection, all questions in interview questionnaire sheet was coded, organized and categorized then the data was tabulated and presented into frequency distribution tables.

Results

Table (1) illustrates distribution of the studied nurses according to their socio-demographic characteristics in three work places. (n=150). This table showed that slightly more than half (51.3%) of the total studied nurses were in the age group ranged from 21- < 30 years old with a statistical significant difference were found

between three work places since $P = (0.018)$. In relation to sex the majority (92.0%) of the total studied nurses were female.

Table (2) shows distribution of the total studied nurses according to their occupational characteristics in three work places. ($n = 150$). This table illustrated that majority (83.3%) of the total studied nurses were nurses in their job description with statistical significant difference were found between three work place since $P = (0.027)$. In relation to daily work hours more than half (58.7%) of the total studied nurses work a daily time from 6 to 8 hours with statistical significant difference were found between three work places.

Table (3) illustrates distribution of the studied nurses according to their main health relevant data in three work places. ($n = 150$). This table demonstrated that less than one third (30.0%) of the total studied nurses have two children. In relation to exercise time per week about two thirds (60.0%) of the total studied nurses haven't do any exercise per week. As regards to nature of excretion more than two thirds (77.3%) of the total studied nurses have normal bowel movement.

Figure (1) revealed distribution of the studied nurses according to their total knowledge score regarding varicose veins throughout the period of the study in three work places. ($n = 150$). This figure revealed that about half (44.0%) of the operating theatre nurses have low level of total knowledge before implementation of the educational program while (78.0%) have high level of total knowledge one month after implementation of the program.

Table (4) illustrates distribution of the studied nurses according to their total score of comprehensive classification of varicose

veins scale throughout the period of the study in three work places. ($n = 150$). This table represented that more than two thirds (72.0%) of the total studied nurses has Telangiectasia (Score C1) in comprehensive classification of varicose vein scale before implementation of the educational program comparing to slightly more than half of the total studied nurses have no signs of varicose veins (Score C0) one month after follow up.

Table (5) illustrates relation between socio-demographic data of the studied nurses and total knowledge one month after the educational program in three work places. ($n = 150$)

This table showed that the mean \pm SD of total knowledge for the age group 30-< 40 years were (59.81 ± 3.87 , 52.04 ± 4.13 and 53.75 ± 3.96) for the studied nurse's work in operating theatre, medical and surgical department respectively.

Table (6) reveals relation between socio-demographic data of the studied nurses and practices of basic preventive health measures one month after the educational program in three work places. ($n = 150$). This table revealed that the highest mean \pm SD of the practices of basic preventive health measures one month after educational program for the age group 30 - < 40 years were (57.30 ± 9.92) for the studied nurse's work in operating theatre.

Table (1): Distribution of the studied nurses according to their socio-demographic characteristics in three work places. (n=150)

Socio-demographic characteristics	The studied nurses (n =150)									
	Operating Theatre (n = 50)		Medical Department (n = 50)		Surgical Department (n = 50)		Total		Chi-square	
	N	%	N	%	N	%	N	%	X ²	P-value
Age										
21 - < 30 years	21	42.0	28	56.0	28	56.0	77	51.3	15.333	0.018*
30 - < 40 years	10	20.0	15	30.0	8	16.0	33	22.0		
40 - < 50 years	5	10.0	4	8.0	9	18.0	18	12.0		
50 - 60 years	14	28.0	3	6.0	5	10.0	22	14.7		
Sex										
Male	5	10.0	2	4.0	5	10.0	12	8.0	1.630	0.443
Female	45	90.0	48	96.0	45	90.0	138	92.0		
Marital status										
Single	6	12.0	12	24.0	8	16.0	26	17.3	1.630	0.443
Married	41	82.0	34	68.0	40	80.0	115	76.7		
Divorced	0	0.0	1	2.0	1	2.0	2	1.3		
Widow	3	6.0	3	6.0	1	2.0	7	4.7		
Place of residence										
Urban	16	32.0	16	32.0	17	34.0	49	32.7	0.061	0.970
Rural	34	68.0	34	68.0	33	66.0	101	67.3		
Socioeconomic status										
Lower than moderate	16	32.0	4	8.0	6	12.0	26	17.3	13.652	0.034*
Middle	33	66.0	41	82.0	41	82.0	115	76.7		
Above moderate	1	2.0	4	8.0	2	4.0	7	4.7		
Rich	0	0.0	1	2.0	1	2.0	2	1.3		
Educational level										
Nursing Diploma	17	34.0	16	32.0	23	46.0	56	37.3	4.955	0.550
Technical Nursing Institute	25	50.0	23	46.0	21	42.0	69	46.0		
Bachelor of Nursing	7	14.0	10	20.0	4	8.0	21	14.0		
Post graduate nursing studies	1	2.0	1	2.0	2	4.0	4	2.7		

*Non-significant >0.05, Significant at P-value < 0.05, High Significant at <0.001**

Table (2): Distribution of the total studied nurses according to their occupational characteristics in three work places. (n =150)

Occupational characteristics	The total studied nurses (n =150)									
	Operating Theatre (n = 50)		Medical Department (n = 50)		Surgical Department (n = 50)		Total		Chi-square	
	N	%	N	%	N	%	N	%	X ²	P-value
Job description										
Nurse	37	74.0	42	84.0	46	92.0	125	83.3	10.976	0.027*
Specialist Nursing	9	18.0	8	16.0	4	8.0	21	14.0		
Nursing Supervisor	4	8.0	0	0.0	0	0.0	4	2.7		
Daily work hours										
Less than 6 hours	23	46.0	8	16.0	5	10.0	36	24.0	28.311	<0.001*
From 6 to 8 hours	19	38.0	37	74.0	32	64.0	88	58.7		
From 9 to 12 hours	7	14.0	2	4.0	7	14.0	16	10.7		
More than 12 hours	1	2.0	3	6.0	6	12.0	10	6.7		
Overtime hours/ month										
None	26	52.0	29	58.0	28	56.0	83	55.3	9.606	0.142
Less than 20 hours	15	30.0	8	16.0	18	36.0	41	27.3		
From 20 to 40 hours	7	14.0	8	16.0	3	6.0	18	12.0		
More than 40 hours	2	4.0	5	10.0	1	2.0	8	5.3		
Years of experience										
Less than one year	4	8.0	14	28.0	5	10.0	23	15.3	23.474	0.003*
One year to less than 6 years	20	40.0	10	20.0	12	24.0	42	28.0		
From 6 to less than 10 years	8	16.0	14	28.0	12	24.0	34	22.7		
From 10 to less than 15 years	3	6.0	8	16.0	10	20.0	21	14.0		
15 years and over	15	30.0	4	8.0	11	22.0	30	20.0		
Continuous hours of work in the standing position in each shift										
Less than one hour	9	18.0	8	16.0	5	10.0	22	14.7	2.812	0.832
From one hour to less than two hours	13	26.0	10	20.0	15	30.0	38	25.3		
From 2 to 4 hours	15	30.0	17	34.0	18	36.0	50	33.3		
More than 4 hours	13	26.0	15	30.0	12	24.0	40	26.7		
Continuous hours of work in a seated position in each shift										
Less than one hour	17	34.0	27	54.0	20	40.0	64	42.7	6.574	0.362

From one hour to less than two hours	19	38.0	13	26.0	21	42.0	53	35.3		
From 2 to 4 hours	9	18.0	6	12.0	4	8.0	19	12.7		
More than 4 hours	5	10.0	4	8.0	5	10.0	14	9.3		
Continuous hours of walking during work in each shift										
Less than one hour	9	18.0	6	12.0	9	18.0	24	16.0	4.661	0.588
From one hour to less than two hours	20	40.0	21	42.0	13	26.0	54	36.0		
From 2 to 4 hours	8	16.0	10	20.0	14	28.0	32	21.3		
More than 4 hours	13	26.0	13	26.0	14	28.0	40	26.7		

*Non-significant >0.05, Significant at P-value < 0.05, High Significant at <0.001**

Table (3): Distribution of the studied nurses according to their main health relevant data in three work places. (n =150)

Main health relevant data	The studied nurses (n =150)									
	Operating Theatre (n = 50)		Medical Department (n = 50)		Surgical Department (n = 50)		Total		Chi-square	
	N	%	N	%	N	%	N	%	X ²	P-value
Number of children										
None	5	10.0	15	30.0	6	12.0	26	17.3	24.046	0.002*
One	7	14.0	5	10.0	10	20.0	22	14.7		
Two	14	28.0	15	30.0	16	32.0	45	30.0		
Three	11	22.0	13	26.0	16	32.0	40	26.7		
More than three time	13	26.0	2	4.0	2	4.0	17	11.3		
Exercise time per week										
None	33	66.0	29	58.0	28	56.0	90	60.0	11.433	0.178
One	9	18.0	6	12.0	15	30.0	30	20.0		
Twice	6	12.0	6	12.0	4	8.0	16	10.7		
Three time	1	2.0	6	12.0	2	4.0	9	6.0		
More than three time	1	2.0	3	6.0	1	2.0	5	3.3		
Nature of excretion (faeces)										
Normal	42	84.0	35	70.0	39	78.0	116	77.3	4.938	0.294
Constipation	8	16.0	12	24.0	10	20.0	30	20.0		
Diarrhea	0	0.0	3	6.0	1	2.0	4	2.7		
Weight & height (

Mean± SD)										
Weight	82.3±15.35		78.78±16.3 7		80.7±15.02		80.59±15.6		0.639	0.529
Height	163.06±15.4 2		162.44±6.4 1		163.84±7.3 3		163.11±10. 5		0.222	0.801
BMI (weight / height²)										
Under weight	1	2.0	2	4.0	0	0.0	3	2.0	12.819	0.118
Ideal weight	5	10.0	10	20.0	8	16.0	23	15.3		
Over weight	22	44.0	16	32.0	16	32.0	54	36.0		
Obesity	12	24.0	17	34.0	23	46.0	52	34.7		
Over obesity	10	20.0	5	10.0	3	6.0	18	12.0		
Current medical diseases										
None	20	40.0	8	16.0	14	28.0	42	28.0	17.462	0.065
Diabetes	13	26.0	15	30.0	8	16.0	36	24.0		
Hypertension	3	6.0	4	8.0	12	24.0	19	12.6 7		
Heart diseases	1	2.0	4	8.0	0	0.0	5	3.33		
Kidney diseases	0	0.0	1	2.0	0	0.0	1	0.66		
Vascular diseases	11	22.0	13	26.0	16	32.0	40	26.6 7		
Rheumatoid diseases	2	4.0	5	10.0	0	0.0	7	4.67		
Medical family history										
None	16	32.0	31	62.0	19	38.0	66	44.0	12.839	0.381
Diabetes	22	44.0	5	10.0	9	18.0	36	24.0		
Hypertension	7	14.0	8	16.0	3	6.0	18	12.0		
Liver diseases	1	2.0	1	2.0	1	2.0	3	2.0		
Kidney diseases	1	2.0	5	10.0	12	24.0	18	12.0		
Vascular diseases	3	6.0	0	0.0	6	12.0	9	6.0		

*Non-significant >0.05, Significant at P-value < 0.05, High Significant at <0.001**

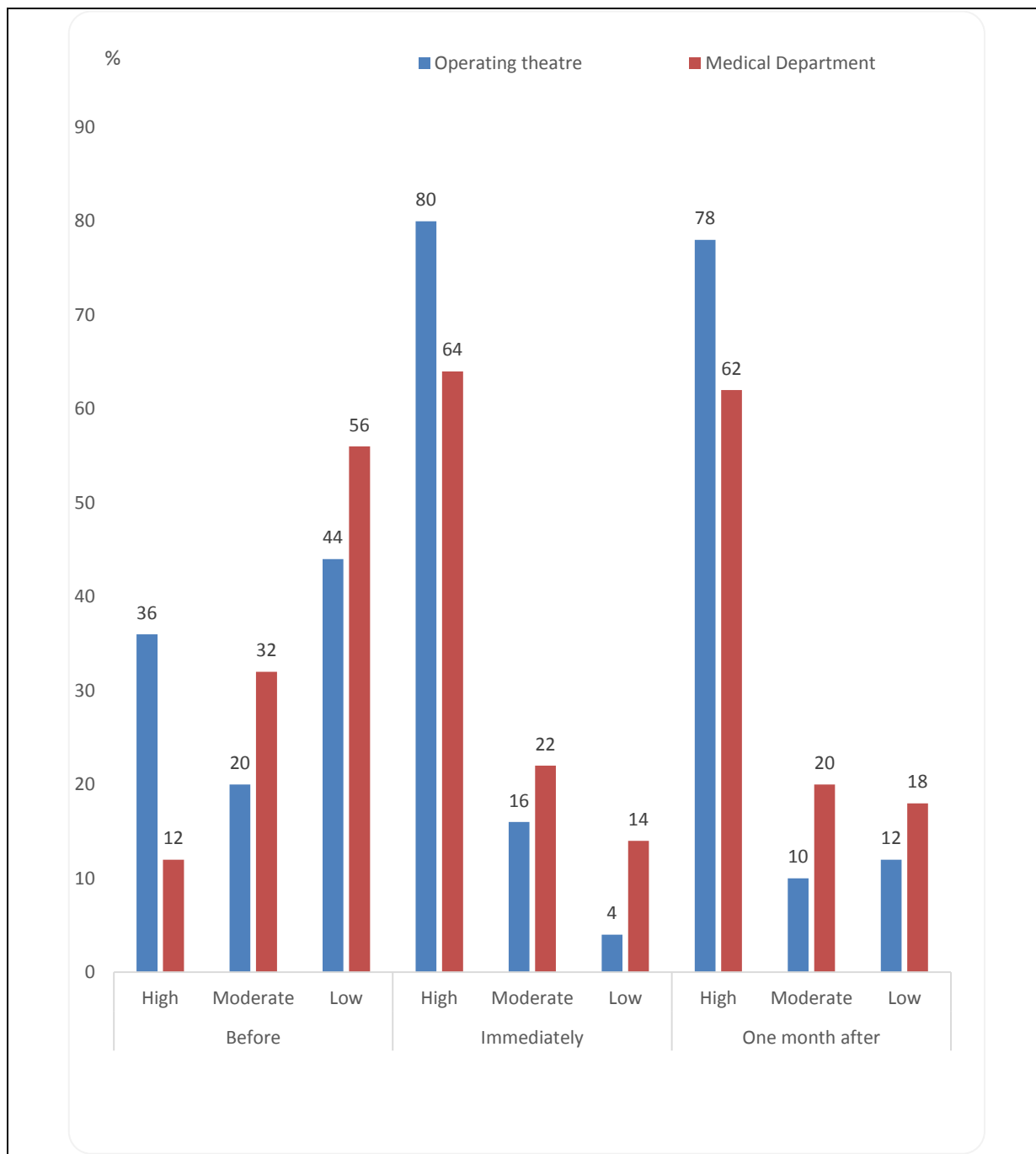


Figure (1): Distribution of the studied nurses according to their total knowledge score regarding varicose veins throughout the period of the study in three work places. (n = 150)

Table (4): Distribution of the studied nurses according to their total score of comprehensive classification of varicose veins scale throughout the period of the study in three work places. (n = 150)

Comprehensive classification of varicose veins scale	The studied nurse (n = 150)						Total		Chi-square	
	Work places									
	Operating theatre		Medical Department		Surgical Department		N	%	X ²	P-value
	N	%	N	%	N	%				
Before										
No visible veins (C0)	1	2.0	1	2.0	0	0.0	2	1.3	2.448	0.874
Telangiectasia or reticular veins (C1)	38	76.0	36	72.0	34	68.0	108	72.0		
Varicose veins (C2)	8	16.0	10	20.0	13	26.0	31	20.7		
Edema (C3)	3	6.0	3	6.0	3	6.0	9	6.0		
Immediately										
No visible veins (C0)	1	2.0	1	2.0	0	0.0	2	1.3	2.448	0.874
Telangiectasia or reticular veins (C1)	38	76.0	36	72.0	34	68.0	108	72.0		
Varicose veins (C2)	8	16.0	10	20.0	13	26.0	31	20.7		
Edema (C3)	3	6.0	3	6.0	3	6.0	9	6.0		
One month after										
No visible veins (C0)	36	72.0	25	50.0	27	54.0	88	58.7	7.754	0.101
Telangiectasia or reticular veins (C1)	12	24.0	21	42.0	16	32.0	49	32.7		
Varicose veins (C2)	2	4.0	4	8.0	7	14.0	13	8.6		

*Non-significant >0.05, Significant at P-value < 0.05, High Significant at <0.001**

Table (5): Relation between socio- demographic data of the studied nurses and total knowledge one month after the educational program in three work places. (n = 150)

Socio- demographic data	Total knowledge (one month)										
	Operating theatre			Medical Department			Surgical Department			ANOVA	
	N	Mean	SD	N	Mean	SD	N	Mean	SD	F	P-value
Age											
21 - < 30 years	15	0.20	0.41	4	0.25	0.50	11	0.82	0.87	3.229	0.055
30 - < 40 years	21	59.81	3.87	28	52.04	4.13	28	53.75	3.96	24.130	<0.001**
40 - < 50 years	10	60.60	3.53	15	48.73	4.45	8	51.38	5.48	21.823	<0.001**

50 - 60 years	5	61.20	3.42	4	52.00	0.82	9	50.56	5.32	10.403	<0.001**
Sex											
Male	5	61.00	3.00	2	53.00	0.00	5	54.40	2.30	11.464	0.003*
Female	45	60.38	3.64	48	50.73	4.56	45	52.42	4.63	65.498	<0.001**
Marital status											
Single	6	60.33	2.94	12	50.75	5.07	8	51.13	6.79	7.296	0.004*
Married	41	60.41	3.79	34	50.56	4.21	40	52.80	3.99	64.828	<0.001**
Divorced	0	-	-	1	45.00	0.00	1	53.00	0.00	2.333	0.145
Widow	3	61.00	1.00	3	56.00	1.00	1	57.00	0.00	19.714	0.008*
Place of residence											
Urban	16	60.50	2.78	16	49.81	4.48	17	52.35	4.78	29.430	<0.001**
Rural	34	60.41	3.92	34	51.29	4.48	33	52.76	4.39	44.680	<0.001**
Socioeconomic status											
Lower than moderate	16	61.25	3.40	4	50.25	4.57	6	55.00	2.28	20.338	<0.001**
Middle	33	59.85	3.47	41	50.66	4.71	41	52.02	4.64	45.681	<0.001**
Above moderate	1	67.00	0.00	4	52.75	2.22	2	55.50	3.54	11.924	0.021*
Rich	0	-	-	1	52.00	0.00	1	57.00	0.00	1.667	0.238
Educational level											
Nursing Diploma	17	59.82	2.43	16	50.31	4.64	23	52.57	4.64	24.984	<0.001**
Technical Nursing Institute	25	61.00	4.06	23	51.48	4.41	21	52.57	4.56	34.746	<0.001**
Bachelor of Nursing	7	59.00	3.16	10	50.00	4.85	4	52.75	4.19	9.325	0.002*
Post graduate nursing studies	1	67.00	0.00	1	52.00	0.00	2	53.50	6.36	1.833	0.463

*Non-significant >0.05, Significant at P-value < 0.05, High Significant at <0.001**

Table (6): Relation between socio- demographic data of the studied nurses and practices of basic preventive health measures one month after the educational program in three work places. (n = 150)

Socio- demographic data	Practices of basic preventive health measures (one month)										
	Operating theatre			Medical Department			Surgical Department			ANOVA	
	N	Mean	SD	N	Mean	SD	N	Mean	SD	F	P-value
Age											
21 - < 30 years	21	55.33	9.28	28	56.96	8.19	28	56.07	7.73	0.234	0.792
30 - < 40 years	10	57.30	9.92	15	56.73	7.58	8	58.88	7.51	0.174	0.841
40 - < 50 years	5	53.00	5.83	4	51.25	8.54	9	60.00	7.12	2.751	0.096

50 - 60 years	14	56.93	7.58	3	53.67	8.02	5	55.80	11.52	0.186	0.832
Sex											
Male	5	51.20	4.02	2	52.50	7.78	5	57.40	10.78	0.773	0.490
Female	45	56.47	8.77	48	56.40	8.01	45	57.18	7.71	0.128	0.880
Marital sta											
Single	6	51.67	5.57	12	55.75	7.44	8	55.13	8.41	0.637	0.538
Married	41	56.44	9.04	34	56.68	8.46	40	57.25	7.90	0.097	0.908
Divorced	0	0.00	0.00	1	53.00	0.00	1	62.00	0.00	3.000	0.095
Widow	3	57.67	3.06	3	54.33	7.23	1	67.00	0.00	1.952	0.256
Place of residence											
Urban	16	57.19	9.78	16	56.13	9.38	17	58.59	8.66	0.294	0.747
Rural	34	55.35	7.98	34	56.29	7.35	33	56.48	7.57	0.212	0.809
Socioeconomic status											
Lower than moderate	16	53.44	6.67	4	53.75	3.30	6	51.83	5.71	0.175	0.841
Middle	33	57.18	9.28	41	56.98	7.82	41	58.34	8.02	0.314	0.731
Above moderate	1	55.00	0.00	4	53.25	12.53	2	50.00	4.24	0.086	0.919
Rich	0	0.00	0.00	1	48.00	0.00	1	57.00	0.00	3.131	0.079
Educational level											
Nursing Diploma	17	55.94	8.79	16	54.56	5.69	23	59.65	8.52	2.200	0.121
Technical Nursing Institute	25	55.04	7.80	23	57.43	8.63	21	54.48	6.84	0.912	0.407
Bachelor of Nursing	7	59.29	11.38	10	57.10	9.47	4	60.50	6.76	0.209	0.814
Post graduate nursing studies	1	55.00	0.00	1	47.00	0.00	2	51.00	0.00	2.457	0.217

*Non-significant >0.05, Significant at P-value < 0.05, High Significant at <0.001**

Discussion

Varicose veins (VVs) are being the most first disease among the chronic venous diseases and it consider a serious worldwide complications among people whose occupation requires long standing, creating serious signs and symptoms which lead to surgical treatment and widespread morbidity. (1, 2)

Regarding socio-demographic characteristic of the studied nurses: The finding of the present study revealed that more than half of the total studied nurses were in the age group ranged from 21- < 30 years old. This could be explained that this age represent the most

active period for nursing work in which nurses exposed to conditions increase pressure on the leg veins include standing for continuous time with both legs bearing weight and overtime work that make veins of leg very weak and finally will develop into varicose veins. (41, 42)

In relation to gender, it was found that the majority of the total studied nurses were female. This could be explained that there was a considerable difference in the number of participating nurses from both genders. This finding was in agreement with **Bader A et al (2020)** (43), who mentioned that the majority of studied nurses were female gender that consider a positive gender-related risk factor

of VVs can be explained by being pregnant.

Regarding occupational characteristics of studied nurses: This study showed that there was a statistically significant relationship between varicose veins and years of experience. In which more than one quarter of the studied nurses has more than 15 years of work experience, this finding was in agreement with **Ren Q (2016)**⁽⁴⁴⁾, who found that the increased years of experience have a major risk factor for developing varicose veins.

Concerning physical exercise, the finding of current study was noted that more than half of the studied nurses who weren't doing any exercise per week have a significant risk factors of varicose veins. This finding was in line with **Yun J et al (2018)**⁽⁴⁵⁾, who found that more than half of studied nurses weren't do any exercise and had poor sedentary life style were suffered from varicose veins .

Regarding health relevant data of the studied nurses: According to the current study, there was a statistically significant relationship between varicose veins and number of pregnancies; in which more than half of the total studied nurses who had two or three time of pregnancy had more prevalence rate of VVs. This may be due to increases in progesterone production during pregnancy⁽⁴⁶⁾. This result was in similar with **Das K et al (2015)**⁽⁴⁷⁾, who found that more than one third of the total nurses who had varicose veins and at least have two children.

Regarding comprehensive classification of varicose veins scale of the studied nurses: before and one month after implementation of the educational program, the present study revealed that more than two thirds of the studied nurses suffered from Telangiectasia leg veins (C1) and nearly one quarter of them suffered from varicose veins (C2) and edema (C3) before implementation of the educational program compared to more than half of them

not suffered from any visible leg veins (C0) after implementation of the program. This result was corresponding **Mehri B et al (2018)**⁽⁴⁸⁾, who revealed that more than two thirds of the studied nurses suffered from varicose veins (C2) and the incidence of VVs decreased to the minority after two month of implementation of program.

Regarding knowledge score of the studied nurses about varicose veins: It is observed from the finding of the present study that less than half of the total studied nurses have relatively low levels of baseline knowledge of varicose veins compared to what is expected. This is supported by the study conducted by **Jaya G (2018)**⁽⁴⁹⁾ who showed in his study that majority of studied nurses had inadequate knowledge regarding prevention of varicose veins. This result was contradicted with **Abrahamson J & Hopp C (2018)**⁽⁵⁰⁾ who revealed that majority of staff nurses were aware regarding the causes, prevention and management of varicose veins while remaining minority had poor knowledge regarding causes, prevention and management of varicose veins.

Regarding practice of preventive health measures regarding varicose veins of the studied nurses: The result of the present study illustrated that nearly one third of the studied nurses had low nursing performance regarding varicose veins before implementing the educational program, while one third of them had high nursing performance one month after implementation of the educational program. This result is in accordance with **Saemi J et al (2020)**⁽⁵¹⁾, who found that there was an improvement between nurses' level of practice pre/ post program counseling.

Finally, the present study demonstrated that there was a high positive significant correlation between the studied nurse's total knowledge and their practices of preventive health measures of varicose veins one month

after implementation of the educational program. This finding was inconsistent with **Blessy S et al (2020)** ⁽⁵²⁾, who found that there were a positive association between the knowledge scores of staff nurses regarding risk factors and preventive health measures of varicose vein with selected demographic variables.

Conclusion and recommendations

Conclusion: Based on the findings of the present study, it can be concluded that: The result of this study showed that most important demographic and occupational risk factors in VVs intensity of the total studied nurses are age, sex, marital status, residence, years of experiences, physical activities especially standing for long periods, pregnancy, physical exercise, weight control and family history.

Recommendation: Based upon the findings of this study, the following recommendations are derived:

1. Recommendation for nurses

All nurses are needed to assess the incidence rate of varicose veins among risk groups because it may be asymptomatic and nurses complained only from cosmetic appearance of the lower limb veins.

2. Recommendation for nursing administration

Provision of colored booklet in all hospitals should be available regarding increasing knowledge for nurses about varicose veins.

3. Recommendation for nursing research

Replication of the study on a larger size of nurses in different hospitals and multiple geographical areas to achieve general and confirm the result of the study.

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